

Tri-Service Site Characterization and Analysis Penetrometer System (SCAPS)

Detecting and Monitoring Subsurface Contamination



SCAPS and its suite of sensors and hybrid sensors/samplers will reduce the cost and time to characterize and monitor remediation activities at contaminated government facilities. SCAPS provides real time, on-site data acquisition and processing.

Traditional methods of site characterization are costly and time consuming. SCAPS is a Tri-Service (Army, Navy, Air Force) research, development, and technology demonstration program. Sensors have been developed to detect, delineate, and monitor sites contaminated with petroleum, oil, and lubricants (POL); volatile organic compounds (VOC); metals; and explosives. SCAPS provides the DoD, DOE, EPA and the private sector with a cost-effective means to rapidly characterize subsurface conditions at government facilities.



USAEC

Environmental Technology Division



Solutions

Rapid Characterization and Monitoring of Contaminated Sites

The Site Characterization and Analysis Penetrometer System (SCAPS) develops, demonstrates, and transitions a rapid means of characterizing subsurface contamination. In addition, SCAPS developed sensors can be used to monitor and support remediation activities. SCAPS reduces traditional site characterization costs by optimizing the placement of monitoring wells and soil borings at a site.

The core of SCAPS is a 20-ton truck-mounted cone penetrometer platform which is used to deploy chemical and physical sensors, soil and water samplers, and small monitoring wells. SCAPS provides the capability to collect and analyze field data faster and with greater detail than traditional site characterization methods. More samples are analyzed on site, providing greater confidence in the definition of the contamination boundaries. An additional benefit of SCAPS is the significant reduction of investigation-derived wastes. The only waste generated is from the steam cleaning of the push rods upon retrieval.

In order to ensure there is no conduit for contamination to move from one area to another, grout is used to seal the penetration hole upon completion of a push. The grout, a mixture of cement, bentonite, and water, is pumped through an internal tube in the cone penetrometer, ejecting the cone tip and filling the hole as the push rods are retracted.

A cost/benefit analysis conducted by DOE (DOE Report #LAUR-91-4016) indicates that 25 to 35 percent cost avoidance can be realized with SCAPS Laser Induced Fluorescence (LIF) technology for the detection of petroleum contamination. In addition, since SCAPS sensor technologies can delineate the extent of the subsurface contamination in real time, there is no need to repeatedly return to a site in order to fill data gaps!

Both the Army and the Navy have SCAPS trucks deployed in the field and available on a contract basis. Current capabilities for these trucks include POL screening using the LIF Sensor, grouting upon retrieval, soil classification, soil resistivity, and micro-well installation, as well as soil and water sampling. Additional SCAPS sensors are being field tested and demonstrated to Federal and state regulators for the detection of VOC, metals, and explosives compound contamination.

The benefits of SCAPS

**technology include faster,
more detailed, and less
expensive site character-
ization and remediation
monitoring.**

**For more information on
USAEC-ETD technology
programs please call the:**

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